**DATA STRUCTURES AND ALGORIHTMS**

**LAB ASSIGNMENT - 11**

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COURSE – AIDE

SECTION - “A”

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Q – Implement radix sort using Java.

CODE:

import java.util.Arrays;

public class RadixSort {

public static void sort(int[] arr) {

int max = getMax(arr);

for (int place = 1; max / place > 0; place \*= 10) {

countSort(arr, place);

}

}

private static void countSort(int[] arr, int place) {

int[] output = new int[arr.length];

int[] count = new int[10];

for (int i = 0; i < arr.length; i++) {

int digit = (arr[i] / place) % 10;

count[digit]++;

}

for (int i = 1; i < count.length; i++) {

count[i] += count[i - 1];

}

for (int i = arr.length - 1; i >= 0; i--) {

int digit = (arr[i] / place) % 10;

output[count[digit] - 1] = arr[i];

count[digit]--;

}

for (int i = 0; i < arr.length; i++) {

arr[i] = output[i];

}

}

private static int getMax(int[] arr) {

int max = arr[0];

for (int i = 1; i < arr.length; i++) {

if (arr[i] > max) {

max = arr[i];

}

}

return max;

}

public static void main(String[] args) {

int[] arr = {170, 45, 75, 90, 802, 24, 2, 66};

sort(arr);

System.out.println(Arrays.toString(arr));

}

}

OUTPUT:

